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## Gamifying literature and aesthetic processes - a student perspective on an interactive play

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**Abstract:** Gamification is often considered a motivational design by the use of points/badges/leaderboards (PBL) yet according to the definition provided by Deterding et al (2011, p. 9), gamification is “the use of game design elements in non-game contexts”. Further, Nacke and Deterding (2017) express a need for empirical research on the impact of gamification beyond PBL and with a broader definition of the game elements used in non-game contexts.

This is the second part on a study on gamification within an interactive play and we previously noted three levels of gamification within a teacher perspective: structural, narrative and semiotic level (Ståhl, Kaihovirta and Rimpilä, n.d.). The aim of this paper is to explore gamification in the interactive play from a student perspective. We intend to reach this by answering the following research questions:

1. How are the three levels of gamification from the previous paper visible through a student perspective?
2. Are there further levels of gamification that emerge from a student perspective?

The study was conducted in collaboration with a local primary school and local theatre in Finland in August to September 2018 and this paper focus on students in year 6 (12-13-year-old). The play was formed by the collaboration and was later offered to other schools within the concept of Theatre in Education, TiE. The study is based on Participatory Action Research, PAR, (Cohen, Manion and Morrison, 2000) and has an abductive approach. The primary data consists of video recordings and the researchers field notes while interviews with the students function as secondary data.

The results indicate that the three levels that emerged in a teacher perspective is also visible within a student perspective. However, through a student perspective, two additional levels were identified: an environmental level as well as an interactional level.

**Keywords:** gamification, interactive play, student perspective

### 1 Introduction

Gamification is a highly topical issue within current educational discourse. In the Finnish National Core Curriculum for basic education it is urged to use the possibilities provided by games and gamification (Finnish National Agency of Education, 2014) yet gamification is not defined nor is it discussed in terms of what it might mean in practice. In the study leading up to this (Ståhl, Kaihovirta and Rimpilä, n.d.) we analysed the interactive play from a teacher perspective and noted three levels of gamification: structural, narrative and semiotic. The aim of this paper is to view these three levels from a student perspective and explore if a student perspective might offer additional levels.

### 2 Games, gamification and aesthetic processes

Aesthetic processes within education can entail learning about and through art. An aesthetic process can further be understood as regenerative; a multimodal response on experience and knowledge. Burman (2014) describes a mimetic view on aesthetics processes and learning as a reflection or transformation as a mirrored view of our reality. This reflection is worthy on its own beyond its connection to reality and all forms of art, including games, can be considered reflections (Folkerts, 2011; Kirkpatrick, 2011).

The interactive narrative structure of games broadens the linear narrative structure of literature and movies (Gee, 2007) and within game narratives, the line between reader and writer is blurred (Beavis; 2007). Games as well as plays, can be considered non-mimetic as they do not reflect everyday life with its non-linear narrative, yet the participant can accept that as a requisite to create a “successful play space” (Upton, 2015, s.254) or setting awareness aside to reach engrossment (Fine, 1983). Koenitz (2017) note a discrepancy in applying the dramaturgical curve of Aristotle on the player's choices whereas Pittner and Donald (2018) stress the difficulty in transforming a linear narrative into an interactive game and note that the interactivity offers new perspectives on the story.

Gamification, coined in 2008, is often seen as a motivational design by using game mechanics (Deterding et al, 2011: Rapp et al, 2018). Previous gamification research has focused on specific software with varying implementations of PBL (Rapp et al, 2018). Education is one key field and most gamification research have been published in 2011 and onward (Kasurinen and Knutas, 2018). Koivisto and Hamari (2019) state that the three key elements to gamification are affordances, psychological outcomes and behavioural outcomes. Affordance refers to the game mechanic used, psychological outcome refers to participants experiences and behavioural outcomes refer to the activity encouraged by the gamification design. Empirical studies on gamification have focused on points as affordance and behavioural outcomes such as performance in relation to time.

There is a need for empirical studies on gamification that is based on varying game mechanical affordances and forms of implementation (Kasurinen and Knutas, 2018; Rapp et al.,2018) with a focus beyond PBL (Nacke and Deterding, 2017) and where gamification could be seen “as organizational and individual practices reminiscent of those which may be observed in games” (Koivisto and Hamari, 2019, p. 205) as well as a need for discussing potential negative effects of gamification. There are studies on aesthetic processes and game-based learning, e.g. in relation to fiction (Hanghøj et al, 2014), yet combining aesthetic processes and game mechanical affordances as gamification is rare. This study is part of a longitudinal research collaboration on aesthetic processes and gamification within the arts in primary education with a focus on other affordances than PGBL. In (Ståhl, Kaihovirta and Rimpilä, 2017; 2018) we noted how within visual art education, students interpreted and transformed the visual expression of indie games as gamification. This paper is the second part of a study on gamification beyond PBL within the context of an interactive play (Ståhl, Kaihovirta and Rimpilä, n.d.)

### **3 Methodology**

#### **3.1 Context of the study**

The study is based on an interactive play; planned and implemented in collaboration between a primary school and the local theatre in Finland, based on the story *The Birch and the star* by Zacharias Topelius (2017). The original story is about two siblings, Lasse and Rosa, sent to live far away due to war. They miss their parents so they walk all the way home, guided by the birch that grew in the yard and the star shining above it. Due to Topelius 200th birthday in 2018 there was a current interest in his work, yet it is the theme of being a refugee that highlights its relevance today.

The play was formed through the collaboration and later offered to other schools as TiE, Theatre in Education (Jackson, 1993; Heathcote, 1984). In TiE, professional actors explore certain phenomena together with teachers and students and common themes are empathy, reflection and communication (Heathcote, 1984). The aim of the collaboration was to create an interactive play with a focus on being a refugee and show children their agency. The collaboration involved theatre educators, actors, the director as well as teachers and students in year 5-8 (11-15-year-old), however this study has a focus on students and teachers in primary education, year 6, see figure 1.

The play called *Världen är så stor* (The world is so big) is based on the original story by Topelius yet set in 2025 where the future Finland is a war zone and children are evacuated to a high-tech refugee camp in Lithuania. The students are introduced to the theme of the play as they arrive at the refugee camp and they get to know the main characters, Lasse and Rosa, played by adult actors. The play reaches its climax as the children are informed that some are allowed to go back to Finland, however, some must remain at the camp indefinitely. Lasse and Rosa must remain at the camp so they instigate a rebellion where the participants appeal to the outside world by a fictive online video, see figure 1.



Figure 1. The first run-through of the play, with the so called the information unit in the middle. The student protest against the fact that only some were allowed to go home by writing messages that shared with the world through a fictive online video.

### 3.2 Participatory action research

The video material was collected by the use of two cameras; one following a focus student with an external microphone and the other camera documenting the entire group. The entire group material includes all present students and educators in the specific sequence. Further, an interview with four students, including the focus student, was conducted. To ensure the respondents integrity, all names have been removed). The students (apart from the focus student, F) that participated in the group interview have been numbered (S1-4), other students remain unidentified with a general S. Do note that all excerpts and quotes have been translated into English by the participatory researcher with the ambition to reflect the original statement.

One of the teachers have been part of a longitudinal research collaboration on gamification within the arts in primary education (Ståhl, Kaihovirta and Rimpilä, 2017; 2018) and the director stated that the group was especially crucial to the process of creating the play. Theatre educators, teachers and researchers have been part of the preparatory work, planning and the implementation of the interactive play. Through PAR, (Cohen et al, 2000; Koch et al, 2005; Genat, 2009), with one teacher as an active agent\* (Priestley, Biesta and Robinson, 2015) made sure that the analysis was relevant from a teacher's perspective.

The PAR approach entailed an ethically complex research situation with the close proximity to the context (Cochran-Smith & Lytle, 2007; Doyle, 2007), and a need for clear communication between the different parties, including the internal work distribution within in the research papers: as the participatory researcher, Ståhl has the main responsibility for the paper, with theoretical and analytic support from Kaihovirta. In different stages of the analysis, the teacher, Rimpilä, has been advised to ensure the relevance of the researched context.

The participatory researcher analysed and documented the preparatory work as well as all phases when the staff from the theatre met with the students, including planning, participating in the play twice as well as discussions afterwards. During the implementation of the play, the participatory researcher's role was to document and note situations that contained game mechanical affordances. Furthermore, the focus on gamification within the study was clear in all phases, and the director expressed that the concept had been discussed within the staff and had formed their process to some extent.

### 4 Gamifying classical literature

With a focus on theory and material during different phases, the analysis of the study can be considered abductive. With a teacher perspective (Ståhl, Kaihovirta and Rimpilä, n.d.), the researchers field notes as well as the video data functioned as primary data while reflections from the educators and texts produced by the theatre functioned as secondary data. The participatory researchers note on game mechanical affordances, from now on referred to simply as affordances, based on an initial understanding of theory on gamification (e.g. Nacke and Deterding, 2017). Based on these notes, three inductive categories emerged: gamification on a structural,

narrative and semiotic level. These three levels were then discussed vis-a-vis the three key elements of gamification (Koivisto and Hamari, 2019): affordances, psychological and behavioural outcomes.

The examples of gamification on a structural, narrative and semiotic level are in this study reopened with a focus on a student perspective, with additional support from the student group interview. The video material and the participatory researchers field notes on affordances were revisited to investigate if further levels of gamification were visible with a student focus. Through the analysis, we thereby articulate the reflections of reality (Folkerts, 2011; Kirkpatrick, 2011) that are present in the collaboration between theatre and primary education through the lens of game mechanical affordances.

## 5 Results

### 5.1 Student perspectives on a structural level

1	T1	Zacharias Topelius (.) is there someone who already knows something about him it can be anything(.)
2	S	he wrote books
3	T1	he wrote books he could almost be called Finland's own storyteller and you know what (.) now (.) we are going to have a <u>gameshow</u>
4	S3	oh ((rises in his chair, pumps his fist in the air and gets back in his seat))

#### Excerpt 1. Preparatory work.

The theatre study material suggested getting to know the author Topelius through a gameshow. The teacher in question introduced the task to, within a group, remember as much as possible from the four-minute educational movie on Topelius. Afterwards, the students had one minute to summarize what they remembered and then the teams alternated writing a piece of information on the board. The teacher noted the correct information on the board per team, yet made no point of comparing the teams. A gameshow can be considered a classical form of gamification as several affordances, such as points, a leader board, a clear mission, competition, limited time and collaboration, are present and the implementation can be considered a clear comment to the Finnish national core curriculum. The concept is adaptable in terms of difficulty and topic and can be considered a variation to more traditional forms of teaching. (Ståhl, Kaihovirta and Rimpilä, n.d.)

From a student perspective, a game show can be motivating, as seen in the excerpt (1, line 6) above. However, in terms of psychological outcomes, this example can also be perceived as difficult or frustrating. None of the students did however voice any negative experiences during the interview, S1 pointed out that it was a competition and F followed up with: "Yeah but you did not get stressed since you know that the others won't remember all that much either".

The gamified task encourages behavioural outcomes such as collaboration, following the rules provided by the teacher and developing memory strategies. Two of the interviewed students (S1 and F) were in the same team during the game show. F expressed that they were happy to have a team supporting them: "If I had been alone, then I would not have scored anything because the other students wrote the things I remembered" although their strategy, one member being responsible for one minute each, did not work out as the teacher showed the movie in full screen mode and the time bar was invisible.

### 5.2 Student perspective on a narrative level

1	D	Can we just do a hand count (.) how many would like that neither of Lasse and Rose goes home how many thinks that would be exciting to see
2		((three students raise their hand))
3	F	((turns to her friend)) but that was last time
4	D	how many thinks it would be exciting to see both of them going home
5	A1	that they get tickets to go home

6 D yeah that they get tickets to go home  
 7 ((three students raise their hand))  
 8 S1 there needs to be more drama  
 9 D who thinks that it would be the most exciting to see  
 one of them going home  
 10 ((25 students raise their hand))  
 11 A2 aah

Excerpt 3. After the first run-through.

After the first run-through of the play, the director and two actors visited the student and the director asked for the students' impressions of specific scenes. When discussing the climax of the play, the director asked the students to raise their hands if they want to participate in a play where A. none of the siblings are allowed to leave, B. both siblings are allowed to leave or C. one of the siblings are allowed to leave. Similar to the narrative structures of games, the director offers the students the option to affect the narrative. Other game mechanical affordances are numerous attempts to participating in a potentially scary narrative in a safe environment. (Ståhl, Kaihovirta and Rimpilä, n.d.)

The students are offered psychological outcomes such as becoming aware of contemporary society, experience engagement over interacting with the narrative or feeling anxious about the difficulties refugees face. The students were aware of the experienced narrative (excerpt 3, line 3) and most students raised their hands to experience option C, a narrative they have yet to experience but is still considered exciting in comparison to option B (excerpt 3, line 8). However, during the second run-through, the director goes with option A again. It is possible that the theatre staff wanted to follow the original linear narrative or they found that the students' opinions were affected by the experienced narrative and as future groups would not experience it more than once, the original narrative remained. During the interview, S4 (excerpt 4) expressed feeling disappointed by not experiencing option C:

R: Did anyone think that the story was somehow ruined when it was possible for you to change it?

S1: No, I thought it was better. More personal.

S2: I thought that they would try that one of them was to go home the last time. So I was kind of annoyed when they did not.

M: So you were disappointed. What about the rest of you, were you disappointed as well?

F: I did not think about it.

S2: But Lasse had that special number that was called out by the information unit. That was probably recorded beforehand so it was not possible for him to get another number.

(Excerpt 4, group interview)

Student 2 continues by pointing out that it might have been due to technical reasons. The focus student did not state that they felt disappointed by this choice. Student 1 expressed that the interactivity gave a personal engagement with the play, even though the changes suggested were not always implemented. The psychological outcomes thereby appear to vary among the students. The behavioural outcomes in this example can be a changed view and behaviour in terms of refugees in general, beyond fiction.

### 5.3 Student perspectives on a semiotic level

1 T2 PEGI gives us age limits and markings on games (.)  
 you can play this game once you are sixteen and  
 there are symbols on what there is in the game (.)  
 if there is this kind of symbol what is there in the  
 game if  
 2 S bad language they swear  
 3 T2 yeah they swear and there is harsh language (.) if  
 there is this kind of symbol a fist and a flash (.)  
 what is that  
 4 S well that there may be fights  
 5 T2 yes violence (.) for an example here is two white  
 people and one black person in the middle what could

that be it says discrimination in English what could  
it be  
6 S it is like two people bullying  
7 T2 yeah there is some form of discrimination in this  
game

Excerpt 5. Preparatory work.

As preparatory work, the teachers decided to focus on symbols and symbolism as an art movement. They discussed symbols in students' everyday lives; such as trademarks, the symbols used to clarify age recommendations in games (PEGI, n.d.) and chess pieces. There was a discussion on symbolism as an art movement by interpretations of several paintings and how symbols traditionally are used within art, e.g. a raised fist. They students were then given a task to individually choose a feeling and create a symbol for it. They were provided with instructions on how to create the minimalistic expression of symbols in games and comic books. (Ståhl, Kaihovirta and Rimpilä, n.d.)

The purpose of this preparatory work was familiarizing students with the symbols used in and the connection between the original story, the interactive play and the contemporary refugee situation. The symbols for age recommendations for games were familiar to the students and they made connections to their reality, visible through their choice of words, see fight and bullying versus violence and discrimination (excerpt 5, lines 4 and 6). This example offers the students psychological outcomes such as experiencing joy or frustration over seeing or not seeing the connection between symbols and what they represent. To take symbols as an affordance even further, the teacher could however have discussed symbols in game narratives and themes. This example offers the students behavioural outcomes such as seeing symbols in their everyday lives as well as symbols within art and the interactive play.

The students mainly noted difficulties such art technical issues or how to choose an emotion: S1 changed their idea from sorrow to happiness since "it was difficult to create a dead rose" whereas S3 noted "that it took ages to get started". None expressed difficulties grasping how symbols are connected to an emotion, however there were other students who did struggle with this connection. Further, F and S3 showed awareness of symbols in a discussion with the director, see 5.4.

#### 5.4 Student perspective on an environmental level

1 D based on what you have experienced so far what kind of  
place is this is it a nice place what kind of signs for  
that do you see (.) within theatre we usually talk giving  
different signs for a setting in the future (.) think  
about that together  
2 S1 well that thing ((points at the information centre))  
3 F that thing I don't know what that is  
4 S1 no idea  
5 F it does look like a small rocket when it changes colour  
6 S1 ((inaudible))  
7 F1 and this is a non nice place it is going to get real  
boring one is not allowed to play one is not allowed to  
8 S1 yeah right

Excerpt 6. After the first introduction.

After experiencing the introduction scene, the students were asked for their opinions on the environment and how it was different from their reality (excerpt 6). The focus student discusses the information unit, see figure 1, as a sign (or symbol) for the future. The focus on symbols in the example of gamification on a semiotic level, see 5.3, might have offered the focus student the tools to see the information unit a symbol.

The game mechanical affordance on an environmental level is using interactive objects, lights and sounds to enhance the context and narrative. There are obvious parallels to game mechanics, such as those using augmented reality. However, all games entail a duality of interactive place and the students raised different perspectives on this during the group interview where the researcher asked if they thought of the place as the gym, somewhere else or as both.

F: I was thinking that I am here, I am not the sort of person who suddenly is in some other world. But it was not like that I was thinking about that I was in the gym.

S1: I don't know. Maybe that we were in another country.

R: Did you think about playing with the basketball hoop?

S1: Oh no, I was in role.

S2: I thought of it as a theatre stage, not a gym.

S3: I somethings thought about what it would be like for real.

R: In a refugee camp?

S3: Yeah.

Excerpt 7, group interview.

As visible within excerpt 7, the psychological outcomes vary among the students, associating the room with both a theatre and a refugee camp. Therefore, the students can have either have the experience of taking on a role on a stage, whereas reflection on refugee life offers a different experience. The behavioural outcomes might vary in line with how the students perceived the play; some might have found a renewed or declined interest in acting whereas others might interact with refugees in different manner.

### 5.5 Student perspective on an interactional level

1	S	it was a bit strict
2	D	It was a bit strict who would agree raise your hand all of you who agree
3		((most students raise their arms))
6	S1	I think it should be even more strict then it would be more real
7	D	even more strict how many of you would agree with that
8		((most students raise their arms, including the focus students))

Excerpt 8. After the first introduction.

Following the discussion on how they found the environment (excerpt 6), one student raised the point of how stern certain characters were and how strict the rules were at the camp (excerpt 8) and this was further discussed during the interview (excerpt 9). The other students agree that it was strict, however, some wanted it even more so. The participants interacted with the actor as if they were their characters, be that guards or children, while being aware that the actor is neither. The interaction a player has with an NPC, a non-playable character, is similar and thereby the affordance as they are both interacted with in a safe environment while the participant is aware of the character not reflecting reality but created as part of the narrative.

S4: Well it did change from the first time to the last time.

S3: The last time was a bit more strict yeah but I do feel like that they could have pushed the limit.

F: I would have liked if the guards were there more but as they were also Lasse and Rosa they couldn't but maybe someone else could have been a guard.

S2: I agree.

Except 9, group interview.

In this example, gamification on an interactive level offers a variety of psychological and behavioural outcomes. Some might find the stern guards scary, whereas some might test the limits as they knew by trying different interactions with authoritative figures in a safe environment. The focus student did express the sternness of the guards as thrilling (excerpts 8 and 9). During the first run-through of the play, one guard drops a ploy mobile phone in front of a student. The actor takes the student aside, questions them, throws the mobile phone on the ground and steps on it, as they are not allowed. During the group interview, when the students were asked what part they had the strongest memory of, the focus student mentioned this event although they were not the student accused.

## 6 Conclusion

The aim of this paper, to explore gamification in the interactive play from a student perspective, offers new perspectives on gamification in education. The previous levels of gamification (see 5.1-5.3); structural, narrative



and semiotic (Ståhl, Kaihovirta and Rimpilä, n.d.) where revisited from a student's perspective and two additional levels emerged (see 5.4-5.5); an environmental and an interactive level. All five levels were analysed based upon the three key elements of gamification; affordances, psychological and behavioural outcomes (Koivisto and Hamari, 2019).

There was a variety of game mechanical affordances, where points and competition on a structural level can be seen as the classical form of gamification currently under scrutiny (Nacke and Deterding, 2017). The other levels focused on different affordances, such as an interactive narrative, game culture symbols and interaction with characters and environment. On the interactive, narrative and environmental level, the students were introduced to the life of a refugee in a safe environment. Similar to the narrative of games (Beavis, 2007) the participants had an impact on the narrative of the play. The difficulties of transforming a linear narrative into a interactive one (Pittner and Donald, 2018) might be the reason for not changing the narrative according to the students wishes.

On a structural level, gamification might offer varying psychological outcomes: motivation as well as frustration. Symbols from everyday life might have opened the students' eyes to the use of symbols in art, such as the information unit in the play, or have felt frustration over the inability to see any connection. On an environmental level, depending on how the students perceive the duality of place (Moore, 2012), their experiences might or might not be connected to the plays theme. On an interactive and narrative level, the play can be perceived as empowering or daunting for the students. As transparency should be part of serious gamification research (Koivisto and Hamari, 2019) we noted positive and negative outcomes on all levels. However, as all levels can be seen as meaningful from an educational perspective, we state in line with Nacke & Deterding (2017), that gamification can be more than PBL.

The behavioural outcomes vary within the different levels. From collaboration and following rules on the structural level to see the reflections of reality in art through the use of symbols on the semiotic level. The narrative, interactive and environmental levels offer tools for understanding what being a refugee entails as well as highlighting the agency of the child. These levels all include the reflections of reality and might thereby offer the students new ways of approaching refugees in the future. These three levels entail a duality, whether of place (Moore, 2012), narratives or characters. In order to create a "successful play space" (Upton, 2015, s.254) or engrossment (Fine, 1983) the students appeared willing to focus on the fiction.

Access to the gamification framework provided by Koivisto and Hamari (2019) during the fieldwork could potentially have provided the participatory researcher with the tools for a more systematic coding of game mechanical affordances. We make a note of this for future research endeavours, however a more systematic approach might have limited the affordances noted by the participatory researcher. The structural level is the only level that does not offer any forms of reflection of the theme of the interactive play. Mimesis within art, whether a game (Folkerts, 2011; Kirkpatrick, 2011) or play, is thereby possible to achieve through gamification as long as that includes other affordances than PBL (Nacke and Deterding, 2017). The interactive play can be seen as an art-informed invention, and as such, we note that there is potential for further student agency and interactivity within the educational design. However, in this study, where gamification functioned as a theoretical lens rather than the basis for the design, five levels of gamification yet emerged. This exploratory work only discusses one form of gamification beyond PBL, and with educators that consider game mechanical affordances in the educational design, there appears to be an untapped potential. Therefore, we stress the relevance of continued empirical research on gamification based on a variety of affordances and potential outcomes when implemented in education.

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